

[0064] The shown embodiments of shock absorbers, sleeves, sensors and connecting techniques, with an easy attachment of the sensor 20, allow the relative position of the damper parts 14, 18 to be effectively detected. Given the secure attachment of the sleeve 12 to one of the sensor parts, i.e., the cylinder part 14, and given the fixation of the index element 22 on the other sensor part, i.e., the piston part 18, a sensor signal can be supplied at the connection 28 which indicates how deeply the piston part 18 is inserted in the cylinder part 14. In this case, the piston and cylinder 14, 18 are surrounded by the flexible sleeve and for example protected against soiling. The flexible sleeve 12 can deform under external effects, for example under strong movements by a chassis. Nonetheless, the connection is sufficient to ensure effective detection due to the attachment of the circuit carrier 26 on the attachment points 30.

[0065] In this case, the embodiments that are shown and described above are only to be understood as examples and nonrestrictively. This relates in particular to the design of the shock absorber. Moreover, the features of the individual embodiments can also be combined with each other differently than is shown in the embodiments, for example by attaching screws at the attachment points 30 of the third embodiment, by connecting fastening elements 32 of the first or second embodiment by means of strips, or by placing recesses or elevations on the inside of the strips 52 in the third embodiment corresponding to the holes 40 in the first and second embodiment.

[0066] While the present subject matter has been described in detail with respect to specific example embodiments thereof, it will be appreciated that those skilled in the art, upon attaining an understanding of the foregoing may readily produce alterations to, variations of, and equivalents to such embodiments. Accordingly, the scope of the present disclosure is by way of example rather than by way of limitation, and the subject disclosure does not preclude inclusion of such modifications, variations and/or additions to the present subject matter as would be readily apparent to one of ordinary skill in the art.

1. A shock absorber comprising:

a first and a second damper part, wherein the first damper part is movably arranged in a longitudinal direction (L) relative to the second damper part, wherein a position sensor is arranged to detect the relative position of the first damper part to the second damper part, wherein the position sensor comprises an index element on the first damper part and an electric detection circuit for detecting the position of the index element, wherein a flexible sleeve is at least partially arranged around the first and/or the second damper part which is fixed relative to the second damper part, and wherein the detection circuit is attached to the flexible sleeve.

2. The shock absorber according to claim 1, wherein: the detection circuit extends over a detection region in the longitudinal direction (L), and the detection circuit is attached to a circuit carrier, wherein the circuit carrier is connected to the flexible sleeve at at least two attachment points spaced from each other in the longitudinal direction (L).

3. The shock absorber according to claim 2, wherein: the circuit carrier is fastened at at least one of the attachment points to the flexible sleeve by means of a fastening element with a head region and a shaft region,

wherein the shaft region penetrates the flexible sleeve and is fastened to the circuit carrier,

wherein the head region is wider than the shaft region, and the flexible sleeve is arranged between the head region and the circuit carrier.

4. The shock absorber according to claim 3, wherein: the head region on the inside facing the sleeve has at least one elevation and/or recess.

5. The shock absorber according to claim, wherein: the fastening element is a rivet, and the shaft region is fastened to the circuit carrier in a keyed or integral manner by deformation and/or joining.

6. The shock absorber according to claim 5, wherein: a seating region for the shaft region is formed on the circuit carrier,

wherein at least the seating region is formed from a material that is at least partially transparent to laser light of at least one wavelength.

7. The shock absorber according to claim, wherein: the shaft region is fastened to a seating region on the circuit carrier by laser transmission welding.

8. The shock absorber according to claim, wherein: the fastening element is fastened to the circuit carrier by a screwed connection.

9. The shock absorber according to one of claims, wherein:

fastening elements of at least two attachment points are connected to each other.

10. The shock absorber according to claim 9, wherein: a plurality of fastening elements is integrally formed on a strip.

11. The shock absorber according to claim 1, wherein: the circuit carrier is fastened at at least one first and one second attachment point to the flexible sleeve, wherein the detection circuit is arranged between the first and the second attachment point.

12. The shock absorber according to claim 1, wherein: the index element is a ferromagnetic index element, an inductive index element, a permanent magnet index element or an electric circuit,

and the detection circuit comprises a coil arrangement with a least one detection coil that extends in the longitudinal direction (L) over a detection region,

wherein an evaluation circuit is connected to the coil arrangement with which the position of the index element within the detection region can be determined by the detection of signals in the detection coil.

13. The shock absorber according to claim 1, wherein: the flexible sleeve sealingly encloses the first and/or second damper part, at least over half of the respective length.

14. The shock absorber according to claim 1, wherein: the flexible sleeve consists of rubber or another flexible material with a wall thickness of 0.5-4 mm.

15. A method to produce a shock absorber with a position sensor, wherein

a flexible sleeve is arranged so that it at least partially surrounds a first and a second damper part whose relative movement is dampened in a longitudinal direction (L), and is fixedly arranged relative to the second damper part,